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Forms of Neuro-Mimesis.*

BY

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Reprinted from  
THE JOURNAL OF NERVOUS AND MENTAL DISEASE,  
May, 1891.



## ASSOCIATION NEUROSES: A STUDY OF THE PATHOLOGY OF HYSTERICAL JOINT AFFEC- TIONS, NEURASTHENIA AND ALLIED FORMS OF NEURO-MIMESIS.<sup>1</sup>

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EVERY practitioner is familiar with a class of nervous affections, commonly known as neuro-mimesis, typified, when occurring as local disease, by so-called hysterical joints, and, when occurring as a more general neurosis, by certain forms of neurasthenia and hysteria. Both types frequently follow traumatism or some acute disease. The different forms which the affection may take are numerous, and, though generally characterized as hysterical, should be distinguished from the classical types of that protean disease. They, as a rule, resemble in the grouping of their symptoms other diseases which are essentially organic. For example: hysterical joints imitate very closely true joint lesions; neuroses of the stomach simulate true dyspepsia or gastritis; localized pain and tenderness resemble the same symptoms due to sprained ligaments and muscles; hypochondriasis, true neurasthenia; neuralgic pain, true neuritis or neuralgia; painful crises, true spinal disease, and so on. As one of the most sharply defined of

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<sup>1</sup> Read before the Medico-Psychological Society (Boston), December 18th, 1890.

these symptom-groups is that of hysterical joints, and one which is best known. I have chosen this in illustration of the points I wish to bring out. It is a very common affection. Brodie, who should have the credit of first describing it, says:

"I do not hesitate to declare that among the higher classes of society, at least four-fifths of the female patients who are commonly supposed to labor under disease of the joints labor under hysteria, and nothing else." While Brodie tended to exaggeration in placing the proportion as high as four-fifths, and was in error in limiting the disease to the higher classes, the general truth of this statement will be substantiated by all surgeons, as it has been by Esmarch, Paget, Skey and Shaffer. The affection is just as common among the poor as the rich.

There is no symptom present in true joint disease that may not be present in this spurious affection: pain, limitation of motion, shortening, swelling, atrophy of muscles, contractures, and, if in the leg, limping. The combination of all these symptoms, however, is seen only in the severer types. The more usual form is represented simply by local pain and tenderness, with the consequent inability to use freely the affected arm or leg; very little, if any, local deformity is then present. Such an affection is commonly called an hysterical joint; but I may call your attention to what is apt to be overlooked—that calling such affections hysterical is not an explanation, and in no way adds to our knowledge of their pathology. At most it is merely saying what they are not, *i. e.*, that they are not due to organic causes.

There is no objection to the use of the term hysterical if one insists on retaining it as a generic term to include various but distinct functional neuroses; but it has its objections, since the word connotes so much, and is associated with such varied pathological processes that it tends to obscure our understanding of them and to prevent our obtaining an insight into their true nature. Hysteria, as at present used, embraces a large number of types of functional affections, which vary greatly among themselves and

essentially differ in their nature, pathogenesis, symptom-pictures and course. It is important that these differences should be recognized and the different types classified according to their pathology. After this has been done it will be found that hysteria can be retained only as a generic term, like the word functional, or else must arbitrarily be limited to a single type of such diseases.

Now, that theory of the pathology of affections of this kind to which I wish to ask your consideration is based upon the psychological law of the association of mental processes. This law may be stated in general terms as follows: Ideas, sensations, emotions and volitions occurring together tend by constant repetition to become so strongly associated that the presence of one of them reproduces the others. This law is so well known that it is hardly necessary for me to dwell upon it before this Society. But it has not been made use of to the extent that it might in the elucidation of the symptomatology of disease. If this law is true of normal sensations and ideas, it must be true as well of sensations of pain, of nausea, of vertigo and similar morbid phenomena. But more than this, one at first sight would naturally infer that if it is true of mental states and their underlying brain processes, it is presumably true of pure physiological activities such as are represented in the spinal cord and the lower nervous centres. Inasmuch as all nervous processes are fundamentally alike in their nature, it is to be presumed that if brain processes, with their correlated mental states, can be welded together into an automatic mechanism, it is similarly true that the pure physical activities of the spinal cord, although not correlated with subjective states, may also be welded together by association in the same manner; and that this is true whether these neural activities are simply physiological and normal or pathological in their nature. This is the thesis which I hope to establish, and I believe that with this law so extended, we shall find that many so-called hysterical affections, many neuroses and psychoses, which otherwise are unintelligible, may be readily explained. They may be termed *association neuroses and psychoses*.

ASSOCIATION OF MENTAL STATES WITH NORMAL  
PHYSIOLOGICAL PROCESSES.

It is a well-known fact that not only may two mental states be associated together, but a mental state and a purely physiological function. For example: increased action of the heart may be associated with various emotions; flow of saliva or gastric juice with the visual picture or memory of certain foods; diminution of saliva with the emotion of fear; spasm of the bladder with the occurrence of various periodic habits of life, and so on.

A neurasthenic patient of mine, who has had several children, but now past the age of child-bearing, tells me that she never hears a child cry without having a feeling of swelling or fullness in her breasts as if the milk was running into them. This feeling is the same she always had when she was nursing her children. On a late occasion, when she was taking care of a friend after confinement, this feeling was so strongly excited by the crying of the child that at the end of a week her breasts ached as of old. The pain persisted for a whole week during which she was in attendance.

ASSOCIATION OF MENTAL STATE WITH PATHOLOGICAL  
PHYSIOLOGICAL PROCESSES.

The act of blushing may be so strongly associated with a single idea, that whenever the idea is present the individual by no effort of will can help blushing. Indeed, this may be carried so far that blushing may become almost a pathological phenomenon, to the annoyance of the unfortunate victim of the habit; and when this act is strongly connected with a particular idea or set of ideas, we may fairly say that we have the first rudimentary association of a normal mental state with a pathological physiological condition. A more marked example of this association may be seen in sea-sickness. I have known a person to be so affected by the motion of the sea that merely looking at the water while standing on dry land has caused severe

pain in the eyes and forehead and vertigo. Actual sailing always produced the same sensations, which were described as being much worse than the classical nausea which always followed them. Again, vomiting is certainly a pathological condition; and yet I know of a young woman who was so unfortunate that the act of kissing was always followed by uncontrollable vomiting. On one occasion the result was particularly embarrassing, it being the moment when she consented to give up her state of single blessedness, and was obliged to leave her accepted fiancé standing in the middle of the room while she hurried off to avoid what would have been a mortifying accident. In each of these instances we have a normal mental state associated with a pathological one, and in the action of kissing, a not at all unpleasant one associated with a very disagreeable function. The mechanism by which these associations and resulting pathological conditions were brought about is easy to understand. In the case of the person in whom severe frontal pain and vertigo were provoked by the sight of the sea, the association of the two mental states—the *visual* picture and the sensation of *pain*, etc.,—is plainly to be found in the past experience of the subject, who had many times had the same sensations produced by the actual *motion* of the sea. By this means the *visual image* of the water, although not the primary cause but an associated idea, had become so firmly bound with the sensation of vertigo and pain, that when the former was present the latter was necessarily reproduced. One cannot here doubt the efficacy of the law of association of ideas to account for the whole pathological process. But in this case the excitant of what is now only the consequence of the association of two mental states was originally an *external agency*, viz., the actual motion of the ship. The impression made by this upon the nervous system was so deep that afterward the presence alone of an associated idea—the visual picture of the water—was sufficient to arouse the other elements of the pathological process. This is a point which I wish to emphasize and make use of later on when we come to study more complex conditions, viz., *that a pathological process*

*in the nervous system, once engendered by an external agency, may afterward be awakened, on the cessation of that agency, by means merely of a physiological action or a psychological state previously associated with it.*

The original cause of such pathological processes is not always easy to determine, but that it may sometimes have its origin in the revival of past experiences (*i. e.*, pure mental states) may be seen by the following incident: A young physician, in whose family had occurred an appalling epidemic of diphtheria, resulting fatally to one of its members, found himself shortly afterward near the diphtheritic wards in one of our large hospitals. Owing to the publicity which had been given to the epidemic in his family, he was urged very strongly by the physicians and attendants not to enter the wards. But desiring to see one of the patients, and feeling that as a member of the profession *noblesse oblige*, he persisted in going in. It is probable that, as so much was made of the matter, a profound impression was made upon his mind. Shortly after leaving the ward he was taken with a severe pain in his throat, which was strongly increased by swallowing. The pain and local sensations in every way simulated that of tonsillitis. Now, the subject of this was absolutely convinced that his pain was entirely subjective or hysterical, and could not possibly be due to local causes, and he endeavored to control it by an act of will. But no mental effort made the slightest impression upon the local symptoms, which were as accentuated as if due to inflammation. It was only by persistent effort directed toward absorption of his mind on professional duties that he was able to free himself from them. In this case we must assume that the experiences of a past sore throat were revived by the visual image, etc., of the diphtheritic throat, and having been once revived, no mental effort could control it; or, putting this into physiological language, we may say the sensory centres of the pharynx were reflexly excited from the visual centres, and, owing to the profound mental impression created, continued thus to be excited as a pure association neurosis.

This association of a mental state with a pathological process is frequently seen following a traumatism, where the revived idea of the accident awakens one or more symptoms which originally formed part of a psychosis long since subsided. For example: A patient of mine, who suffered from nausea, vomiting, headache and dizziness, following a shock in a railway accident, suffered from these same symptoms for several months afterward whenever he rode in the cars, although between times he was practically free from them. He has since recovered.

The following is an example of the association of two pure *psychical* states following traumatism: A friend of mine, at present in absolutely good health, was knocked down, some years ago, in the streets of New York by a coach drawn by four horses. The accident was unusually startling, the coach coming upon him unawares, so that he was knocked down without warning. Almost the first thing he was conscious of, beyond the nervous shock, was the fact that he was lying on the ground, while over and above him, as he looked up, was the white belly of a horse. To-day, if this person is suddenly startled by any noise, he tells me that he sees before him as a vivid mental picture the white belly of a horse. Here is an association of the mental state of fear and a visual image.

I know of no more beautiful illustration of the association of a single *mental state with a pure physical* process than that furnished by a case of Dr. Mackensie, of Baltimore. It was that of a lady who had been for years a terrible sufferer from rose cold, or hay fever. The disease became aggravated by the addition of asthmatic attacks which complicated the coryza. She had become so sensitive that the number of exciting causes of an attack was very large. She was so sensitive to roses that the mere presence of a rose in the same room was sufficient to induce an attack. Suspecting the nature of her trouble, Mackensie obtained an artificial rose of such exquisite workmanship that it presented a perfect counterfeit of the original. One day, when the lady came to his office, after assuring himself by careful examination that she was perfectly free from coryza,

Mackensie produced the artificial rose from behind a screen where it had been concealed, and held it in front of her. Almost immediately a violent attack of coryza developed. Her eyes became suffused with tears, the conjunctivæ injected, the puncta lachryma began to itch violently; her face became flushed, the nasal passages obstructed, her voice hoarse and nasal; she complained of a desire to sneeze and tickling and intense itching in the back of the throat and in the auditory meatus; there was also photophobia and secretion of fluid from the nasal passages; to this was added a feeling of oppression in the chest and a slight embarrassment of respiration. Examination showed the nostrils almost completely obstructed by swollen, reddened and irritable turbinated structures and filled with fluid. The mucous membrane of the throat was injected.. At this point Mackensie stopped the experiment, thinking it had gone far enough, and the patient left the office with a severe attack of coryza.

The sequel is equally interesting. The true nature of the rose was shown to the patient, with the result that on her next visit she plunged her face into a bunch of real roses without ill effect.<sup>2</sup>

I know nothing more instructive than this case. We have all the phenomena of inflammation, a series of apparently organic processes set into activity by the force of an associated idea. It would seem as if the physiological processes of secretion of tears, secretion of mucus, vaso-motor action (causing injection of tissue), pain, etc., were united into an automatic mechanism, and the whole connected (associated), as with a spring with a higher visual centre, which when touched set off the whole mechanism. The principle here involved is an important one, and it will be well to bear it in mind when we come to consider other complex associations. It shows conclusively the possibility of an automatic nervous process of considerable complexity becoming established, and afterward excited

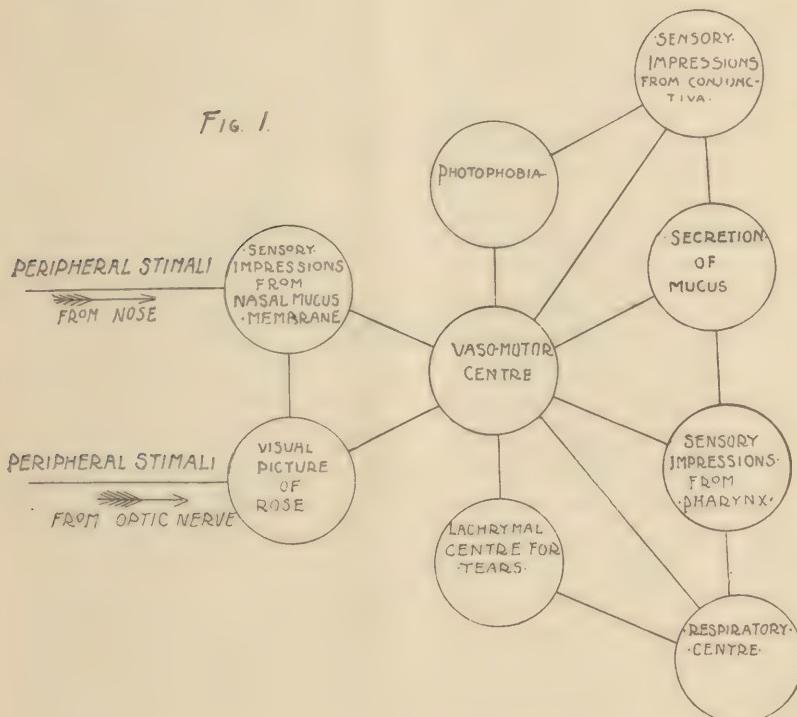
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<sup>2</sup> Am. Jour. Med. Sciences, vol. xci., p. 45, 1886. The reader is referred to this interesting paper for accounts of numerous cases of neuroses of various kinds associated with a fixed idea.

anew as an independent neurosis by a purely physiological stimulus.

I have myself seen a young woman who has suffered from frequent attacks of nervous coryza and sore throat; but although the nervous origin has been apparent, the automatic mechanism is not so sharply associated with a single idea as in Mackensie's case.

The whole process in this case may be diagrammatically as follows :



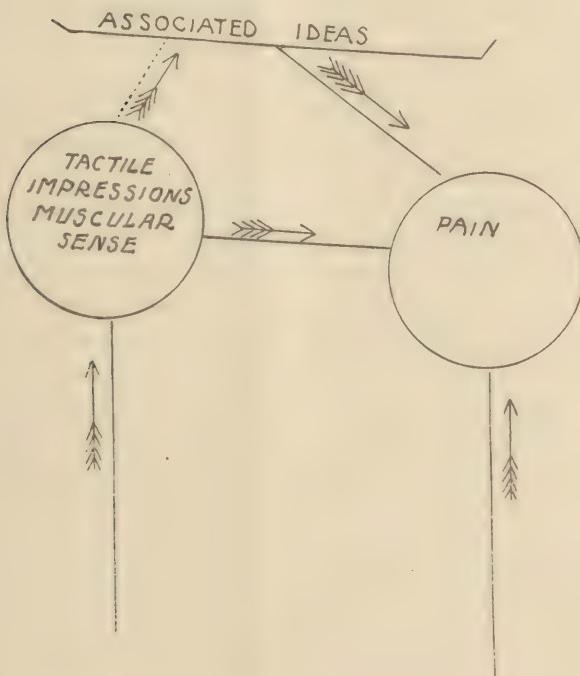
Originally the peripheral stimuli which created the neurosis came from the nasal mucous membrane. Afterwards when the different centres had become welded together into an automatic whole, the entire process was exploded by the visual impressions from the optic nerve stimulating one of the associated centres.

## HYSTERICAL JOINTS.

I think I have given enough to show that a pathological process may be the expression of an association of mental states or of physiological activities, or the combination of both, although the examples cited have been drawn from very simple, perhaps rudimentary forms of neuroses ; but I wished to illustrate the principles of the law by the simpler examples before applying it to those in which the conditions are more complex. Let us now return to hysterical joints, which we selected as an illustration of a well-known type. I will cite the following simple case, which probably every one can duplicate in his own experience. A strong, vigorous man meets with an accident causing more or less injury to the knee joint. Motion and any use of the leg of course causes pain and makes locomotion impossible. He is confined to his house or his bed, takes care of his knee nurses it, bandages it, applies the usual remedies, and treats it, under the advice of his physician secundem artem. The injury at the outset was only a slight one and, yet at the end of six or eight weeks he is still disabled. He comes to you for examination, and after carefully inspecting the leg you are unable to detect any local deformity; but he complains of pain on walking, he limps, and you find some tenderness on pressure about the joint and pain located here or there on passive motion ; but you find no local objective signs to account for his condition. Such a case I saw the other day. I was satisfied that the disability was entirely subjective, hysterical if you please, and to be explained as an association neurosis. I found also, what is very common with such patients, a mental timidity about using the leg for fear of aggravating the mischief. I told him to throw away his cane, to walk without limping and disregard his leg, assuring him at the same time that his knee was well, and only required use for the pain to disappear. This advice was followed by a prompt recovery. The mechanism of the neurosis in this case I conceive to be as follows : a bona fide lesion about the knee is produced. At every attempt to use the limb, every time the knee is bent pain is felt in the joint;

in consequence of this the sensory centres, stimulated by the centripetal impressions due to bending the knee, are firmly associated with the sensory centres of pain excited by the same act. Later the local lesion entirely disappears, but the two central sensory processes remain so firmly associated that the mere act of bending the knee awakens both processes—the pathological one of pain as well as the physiological one of sense of movement. This may be diagrammatically represented as follows, Fig. 2 :

FIG. 2.



At first the centres of pain are excited directly by the peripheral stimuli from the joint ; later indirectly from the associated centre of muscular sense, etc., as indicated by the arrows.

I have no doubt that in most of these cases the sensory centres in the central nervous organ are maintained in this condition of association, by an auto-stimulation dependent on the condition of mind of the subject, which is generally that of anxiety regarding the future of the injury.

But leaving this point for the present and passing on to the study of more complex conditions, I will cite in illustration the case of a little girl who was brought to me for trouble in her leg. On examination I found that not only was there pain on motion in the knee-joint, but there was also marked contracture of the ham-string muscles, so that when the patient attempted to walk, the heel was drawn up, and the weight of the body was for the most part supported on the ball of the foot. There was also decided atrophy of the muscles of the calf and thigh. The electrical reactions, however, were normal. Repeated examinations by Drs. Burrell and Cushing, as well as by myself, failed to detect evidence of organic disease of either the knee or the hip joint. In Dr. Burrell's report I find it stated, "the length of limbs are the same, although the right leg is apparently 1-4 inch longer than left; limitation of motion in the right hip; right leg in position of extreme rotation; slight abduction and slight flexion of the knee (at this time flexion had diminished decidedly owing to treatment)." "No heat or tenderness about either knee or hip joint; left side of pelvis rotated forward toward the left, right scapula held higher than left, apparent lordosis. Diagnosis—Neuro-mimesis, atrophy from disuse." There was in this case a history of traumatism. Some six or seven months previously a schoolmate pulled the girl off her seat at school, and she fell to the ground with her leg crossed under her. She sprained her knee, and, according to her mother's statement, she complained of pain in the joint for some days after. Her mother thinks there was a little puffiness about the knee at the time, and asserts that the girl soon began to limp, that the leg was in a constant state of slight flexion, and that it was difficult to straighten it. This limping and bending of the leg had increased up to the time she came under my observation.

Under treatment which consisted principally of electricity and moral encouragement to use the leg regardless of pain, and especially to extend it, the girl improved in the course of a month or so. She was soon able to walk with the heel on the ground, and had no pain except when attempts were made to extend the leg passively, and was encouraged to believe that recovery would soon take place. She was then lost sight of for nearly a year. At the end of this time she presented herself again for examination. She was then found to be in practically the same condition as she was when last seen, no further improvement having taken place. The difference in size, however, of the two legs was more marked, and it was found to be impossible to straighten the leg. One day while examining her it was noticed that when she was told to make a strong effort to kick with the disabled leg, although she appeared to do so with considerable force, yet the patella and its tendons did not rise up in relief as did those of the other knee, and that when extension reached a certain point, namely, that corresponding to the position in which the leg was habitually held, the extensor muscles on the front of the thigh ceased to contract, and instead of becoming hard to the touch, like that of the sound limb, remained soft. At the same instant the hamstring tendons stood out in strong relief from contracture of these muscles. In other words, at first sight, there seemed to be simultaneous with the contracture a paralysis of the extensor muscles. But a simple test showed that there was no real paralysis, for when she was told to raise and lower herself on one leg, or to step on a chair she was able to do so with ease. The only explanation, then, of this phenomenon was a sudden *inhibition* of control of the extensor muscles at the same instant that the *contracture* of the flexor muscles took place. Another element was thus added to the symptomatology. In measuring the leg it was further found that although the difference in the size of the two legs was somewhat increased, it was not due to increase of atrophy, but to increase of growth of the sound leg. The atrophy was apparent rather than real. The electrical reactions were perfectly normal. The path-

ology of the case seemed now, for the first time, to be clear, and the clue to rational treatment was obtained, as will presently appear from the sequel.

The conditions in this case, then, were as follows: Probably at the beginning local inflammation, pain and muscular spasm; later, pain, contracture, muscular inhibition, atrophy.

How are these to be explained, and in particular the contracture? A little consideration, I think, will enable us to do so without difficulty. Contracture of this kind is only persistent spasm. If we examine a normal joint we shall find that any attempt on our part to move it is accompanied by more or less spasm of the muscles controlling it, and only by a strong effort of will, if at all, can a person inhibit such involuntary contraction. In the case of an inflamed joint, any motion sufficient to cause pain is followed by marked spasm of the muscles, which may be so intense as to hold the joint perfectly rigid. Now this spasm is, in my opinion, nothing more or less than an exaggeration of a normal condition; but, whether this be admitted or not, spasm of a muscle moving a joint is a classical symptom of joint disease. Further, by extension of the reflex process, limitation of motion in the neighboring joints may be induced; for example, when movements of the hip are limited by disease of the knee.<sup>3</sup>

Now in the case of A. F., during the first days following the accident, when there was more or less local injury to the joint, the slightest effort to extend the leg was followed

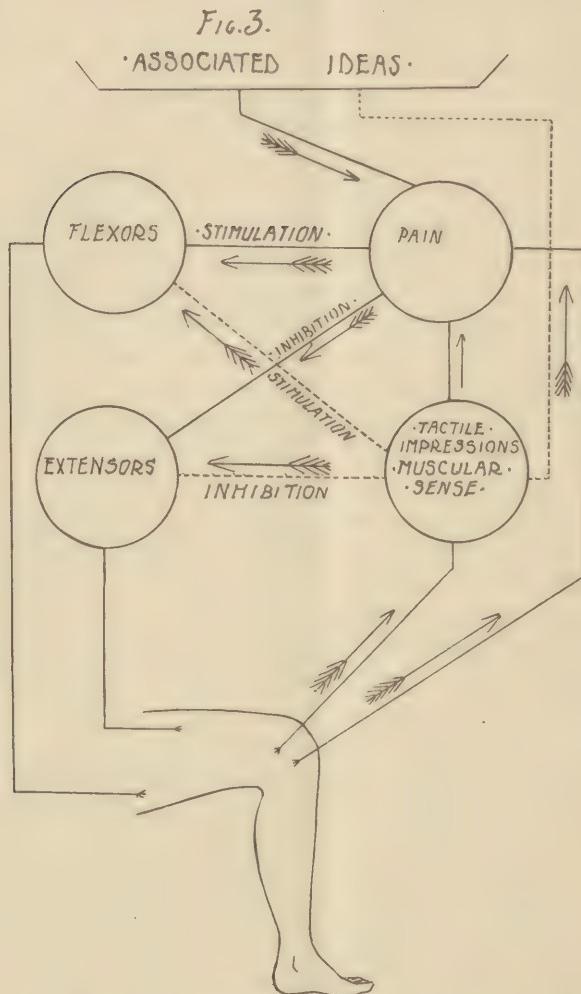
<sup>3</sup> Much light is thrown upon the mechanism of contracture from peripheral irritation by a study of the simpler forms, such as are observed in "paradoxical contraction," and the similar phenomena observed in hysterical subjects to which Charcot and Richet have called attention. In such subjects the pain on movement of a joint induces a contracture of the muscles of definite duration. Massage of a muscle or friction of the skin in certain hysterical subjects also causes more or less persistent contraction. I have already reported ("Bost. Med. and Surg. Jour.", 1887) a case of persistent spasm of the tibialis anticus and extensor muscles of the toes maintained by peripheral irritation from the great toe joint. This spasm was in all probability begun as a volitional contraction to relieve pressure, but was afterward continued for at least twenty five years by peripheral stimulation, as a mere automatic process, similar to that we are considering; and this, although no signs of local disease could be made out.

by pain and spasm of the hamstring muscle. At the same time there was voluntary disuse or inhibition of the extensor muscles owing to the pain. The slightest motion, that is to say, the slightest centripetal impression, from the joint due to change of position, excited not only the sensory centres of muscular sense and pain, but the motor centres as well. By constant repetition these centres became physiologically associated together. Sense of movement, pain, muscular inhibition, spasm became firmly united into one automatic process. In course of time the local injury subsided, and with it the local causes of pain; but now, the centres having become thoroughly welded together, the peripheral impressions of movement are alone sufficient to excite the whole process, and pain, muscular inhibition and spasm are excited as before. The automatic process having become once established, it continues as an independent neurosis after the original exciting cause has ceased to exist.

The moment the knee is extended beyond a certain point, the impressions of muscular sense are sufficient to work the automatic process and stimulate not only their own sensory centres, but those of pain and motion. This process is represented by Fig. 3.

So much for the theory; now for the proof. It will be remembered that this girl has been in this condition for over one year and a half. During the first few months that I saw her, about six months after the accident, she improved to this extent, that she could get the heel down to the ground, and the contracture was much diminished, but the leg never could be absolutely straightened. It will be remembered that at the expiration of nearly another year on her return to me she was in the same condition that she was when I saw her ten months previous. No improvement had in that time taken place. It was then that on re-examining her I made out the condition of things already described and obtained the first clue to intelligent treatment. It was based on this theory of an association neurosis, and on the fact that she had lost control by long habit over the extensor muscles of the leg. When directed

to draw up the patella of the affected leg she was unable to do so. She could draw up the patella of the left leg with ease. Therefore the first step in treatment was directed



toward teaching her to regain control over the right inhibited patella. She was first practiced in moving the left patella, and then both in unison. After a few minutes I succeeded in teaching her to draw up the right patella,

and when she did so the spasm of the hamstring muscles began to relax ; and soon, for the first time during my whole observation of her, the leg straightened out and the deformity dissolved. Still forcible passive extension of the leg at that time resulted in spasm and she was unable to straighten the leg while the weight of her body was upon it. After she had learned to draw up the patella while lying down, she was taught to extend the leg completely by kicking—that is, to continue contraction of the extensor muscles after the knee had arrived in the position so long maintained, and until the full extension of the leg was accomplished. This was finally successful. She was then made to stand on the leg and throw the knee back ; later still, to walk throwing the knee back with every step.

Although this training had been carried on under most unfavorable circumstances, that is, during an occasional visit to the hospital, about once a week or ten days, and under the supervision of the mother at home, the result has been that she can now extend one leg as well as the other, and the contracture has disappeared, though the limb occasionally relapses into its former position when she is not observed. . The pain has disappeared.

It should be said that to induce these exercises a great deal of moral and physical influence was necessary, as the child was very rebellious and complained of pain about the joint at every effort to straighten the leg, and pretended to be unable to do what was wanted and to suffer in the doing of it. It was not difficult to make out that this was mostly simulated. Otherwise the child showed no hysterical condition. With this result I think I may fairly say that our theory has been proved.

It will be noticed that the consideration of the atrophy has been omitted in this discussion. This was necessary, because there is still much difference of opinion regarding the pathology of atrophy in true joint disease. While orthopædists tend to regard it as due solely to disuse, neurologists generally regard it as due to some neuropathic process. Until this question is decided, one must speak with caution in these hysterical cases; but there are several

explanations, any one of which would be sufficient. In the first place, the atrophy, as has been said, was not as great as appeared at first sight. The great difference in the measurements of the leg was shown to be due to increased growth of the sound leg, rather than to retrograde process in the injured limb, so that the whole may be regarded rather as a hindrance of growth than an atrophy. Or it may be that at the beginning there was a slight atrophy due to the true joint trouble,<sup>4</sup> and since then there has been simply a retardation of growth. If atrophy of true joint disease is really due to disuse, it would explain everything that is present in this case. If, on the other hand, as I believe, the pathology is more complex, it may be readily supposed that the same inhibitory influence which paralyzed the extensor muscles inhibited the cells in the anterior cornua of the spinal cord and inhibited the growth of the limb. In this case the atrophy would be introduced into the automatic process.

#### PSYCHICAL ELEMENTS AS A FACTOR IN THE PROCESS.

The study of the pathology of these affections would be far from complete if no account were taken of the psychical elements as a factor in the generation of the neurological process. The mental element undoubtedly plays a very important part, and particularly in maintaining the neurosis after it has been once established. That pain and various other nervous phenomena may be kept alive by the mind dwelling on it, is a well-known fact. It is not, however, so well recognized that symptoms may be maintained in this way in sufficient prominence to constitute by themselves alone a distinct neurosis; although it is well known that when limited to the intellectual side of consciousness they may become so persistent as to form a well-recognized psychosis known as "fixed ideas." In this way an association neurosis may be kept from subsiding and may be main-

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<sup>4</sup> I have known this to occur in a case of paralysis and atrophy from neuritis. The paralysis passed into hysterical paralysis, which was suddenly recovered from in a moment of mental excitement. The atrophy, which was marked, persisted during the hysterical stage.

tained for an indefinite period of time. A very good illustration of the effect of this element may be seen in the following case : I was consulted by a neurotic patient of mine for a very sharp pain in the foot below the inner malleolus. On examination of the foot I found the tissues decidedly puffy at this place and exquisitely tender to the touch. She walked with considerable pain and limped badly. I could obtain no traumatic history. From the puffiness of the tissues and the tenderness, I was inclined to the belief that there was a local injury of some kind—probably a neuritis—but was in much doubt. However, I assured her in a confident tone that the case was plain and that the trouble was “pododynia.” The word evidently struck her imagination and she seemed to be contented. Presently she said to me, “What is pododynia ?” I laughed and said, “Pododynia is pain in the foot.” Upon this she laughed heartily and said, “Never mind. I feel much better already. It is a great comfort to know what it is,” and then she added, “If you doctors would always tell us what is the matter, we should not suffer half so much and would get well much quicker.” In the course of a few hours or so she was walking about without limping and free from pain.

Whatever the origin of the pain in this case it had evidently been maintained as a pure idea. The number of symptoms that may be maintained in this way as fixed ideas is numerous, and may be severe enough to lead to the absolute disability of the patient. Pain, nausea, vomiting, tired feeling and paralysis are very common ; the last especially after railway accidents ; and, in my opinion, they constitute a considerable proportion of traumatic neuroses.

#### MIMICRY PROPER.

This leads me to another class of hysterical affections closely allied to those following traumatism ; one in which the neuro-mimesis is due to mimicry in the popular sense of the word, without traumatic history. Weir-Mitchell has devoted a very entertaining chapter to this class of diseases

in general. It is most instructive to see to what extremities mere mimicry may reduce the human body. There is hardly any function which may not be disturbed. Paget records the case of two brothers, one of whom had true joint disease, the other the hysterical form contracted by pure mimicry; and Shaffer two sisters, similarly affected.

The exciting cause, however, seems to have been, in Shaffer's case, a slight traumatism. The one with neuro-mimesis had nursed the other during her illness.

Weir-Mitchell, after detailing from his great clinical experience a number of cases of mimicry, many of them extraordinary in their details, says that he has often pondered over them trying to satisfy himself whether the pain so often complained of was really true pain like that suffered by other people. He says he has found it difficult to answer this question; but, after hearing the autobiographies of a number of his patients, he believes the pain is real, though due to the mind constantly dwelling on itself. I should say that in such cases there can be little question about the correctness of this opinion, and that pain of this sort is the true psychical equivalent of stimulated centres ; but these centres are excited by an auto-stimulation the result of discharges along association tracks from higher centres.

In other words, we must look for the solution of the primary excitation of these psychoses, not in external causes such as traumatism, but in internal stimulation from previous ideas or mental pictures which secondarily lead to the development of an automatic process similar in every respect to that produced by traumatism. Such a mental process would be identical with that known as the psychosis of fixed ideas—a well recognized type. Taking a specific case in illustration, the automatic process would be developed in some such way as this : Take for example the case of facial spasm recorded by Weir-Mitchell. While showing a case of facial spasm of one of his confrères, Dr. Weir-Mitchell noticed that that gentleman's face was suddenly affected with spasm in a way similar to that of the patient which he was exhibiting. His medical friend was entirely oblivious of the fact and the spasm was absolutely involun-

tary. In this case the excitation of the visual centres corresponding to the visual image of the muscular spasm was reflected along the association tracks to the centres of the facial nerve, the stimulation of which resulted in facial spasm. The whole process was absolutely automatic. Cases of pure mimicry of this sort are not very uncommon. Every one is familiar with the dancing mania of the Middle Ages, which spread like a great plague through a large part of Central Europe. The contagion passed from city to city and from province to province until thousands were affected with this strange disease. In Strassburg it obtained the name of St. Vitus's dance, from which the name of our modern disease is derived. Individuals were attacked with convulsive seizures from merely watching others dancing in their presence. In Italy the disease was known as tarantism, and was supposed to be due to the bite of the spider, the tarantula. The spasmoid movements, once generated, they were beyond the control of the will and continued as automatic processes. Only a few years ago Weir-Mitchell observed a very interesting epidemic of convulsions in a children's ward in a home in Philadelphia. The convulsions were epileptiform, sometimes choreiform, in their character, and often very severe. One child after another became affected until finally more than a dozen were attacked. Some of the cases were very violent and very rebellious to treatment. It became necessary to isolate them from one another and to distribute them among the different hospitals of the city, where they finally recovered, after varying periods of from one to three months. In these cases, although the convulsions were primarily due to a mental impression, the neural process became so firmly engrafted in the nervous centres that it persisted as a neurosis beyond the control of the will. It is well known that many neuroses, although they may have originated in volitional attempts to deceive, nevertheless pass in time beyond the control of the will and persist as true pathological processes.

For example, though vomiting primarily may have been begun by a malingerer or hysterical patient, with the di-

rect desire to deceive, it may afterward persist in spite of the subject's desire to stop it. *When the various neural processes have been well amalgamated, no matter what the original excitant, they seem to be carried on in the lower centres as an automatic mechanism in the form of a neurosis.*

Physiologically this is well recognized and is the basis of education and most of our daily actions. Sewing, reading, writing, piano playing, telegraphing, skating, walking, etc., though primarily begun as a series of individual volitional acts, but later become welded together in lower nervous centres as automatic processes, and are carried on for the most part without intervention of volition. In a similar way processes that are pathological may be originated.

Taking the case of hip disease recorded by Paget, and due to mimicry, the explanation is obviously as follows : The sight of his brother's condition excited by suggestion in a sensitive nervous organization the sensory centres. The result is real pain located in the hip. The limb is held rigidly in one position, partly by volition and partly as a reflex process from the sensory centres, in consequence of the physiological law of spasm in muscles moving a joint in which there is pain. After the pain and spasm have been long continued in association, the spasm becomes contracture. Limp necessarily follows, vaso-motor and trophic centres may eventually be included in the association, owing to diffusion of the stimuli along the physiologically connected reflex tracks. In this way all the symptoms of true joint disease may result, and an independent automatic neurosis may be established.

#### NEURASTHENIA, TRAUMATIC PSYCHOSES, ETC.

There is another class of diseases in which the association process plays a conspicuous part, and often stands out in relief as the dominant feature in the symptom picture. I mean that large group of diseases known as neurasthenia, including some forms of hypochondriasis and hysteria. I may say in parenthesis that neurasthenia, as a term, means very

little. As ordinarily used in practice, it embraces a variety of very different and distinct pathological conditions. At best I think it represents a bodily condition upon which are grafted various neurotic processes of different pathology. It may be compared to a pool in which when the water is low, various forms of animal and vegetable life previously hidden out of sight emerge from its depths and approach the surface, while numerous foreign fungi and algae find in the stagnant water a suitable culture for their development; but when the water is high and its circulation is quickened by the inflowing springs, the organic life at the bottom sinks out of sight, and the parasitic growths on its surface perish from contact with the freshened and oxygenated water. So in so-called neurasthenia, when the general vitality is lowered, the individual seems to become conscious of every response of the body to the outside world, and to feel the vital friction, as it were, of the various functions carried on by the internal organ; at the same time neural processes become engrafted upon the nervous system as the expression of the reaction of the depressed organism to the surroundings. On the restoration of the general vitality to its normal level, these processes are, as a rule, broken up, but they may persist as independent automatic neuroses. These neuroses may constitute a considerable portion of the symptom-picture of neurasthenia and allied affections.

And I may say here that I believe that the symptom-picture of many cases of *Traumatic Psychosis* is to be explained in this way. The persistence of the symptoms in such cases is to be explained by the law of association, which also enables us to understand the early recovery of many cases after the award of damages has been made, without imputing fraudulent motives.

The origin and development of this symptom-picture offer a field for study which deserves the attention of the clinician, and if approached from the point of view already laid down, will amply repay the labor given to it. One will be surprised to find how intelligible many symptoms become, which, before could not be explained, or which were simply set down as "neurasthenic."

A few cases in illustration will make clear the application of the principle :

A woman, forty-one years of age, came to me complaining of paroxysms of pain, from which she had suffered for ten years past. The pain was located in the epigastrium and sometimes was accompanied by pain under the right eye, and in the soles of the feet.

It was described as hot and burning in character, "just as if you put your finger on the stove" (as she said). These paroxysms came on nearly every day, and lasted from one minute to half an hour; when occurring at night, she was unable to obtain any sleep. As a rule, during the day "she could not go over two hours without pain" of greater or less severity. Physical examination showed nothing abnormal beyond a tender spot at the junction of the sixth or seventh rib with the sternum on the left side. She was of a nervous, anxious temperament, easily worried and disturbed by trifles. Cross-examination revealed the fact that ten years ago she received a great nervous shock in the form of some "terrible news." She thinks the first pain came simultaneously with the nervous shock, and she ascribes her condition to that accident. At that time she became "numb all over;" "for four or five months could not sleep at all;" felt dazed and confused in mind; if spoken to voices sounded "away, away off;" this is the best description I can obtain of her condition at that time. At present any mental worry or excitement causes a paroxysm; for example, after waiting two hours in my office without seeing me, she went away under the disappointment, "all doubled up with pain." Physically she is in good condition. Is strong and can walk long distances, her spirits are easily depressed or elevated; overtire, worry, disappointment, in fact anything that upsets her mental equilibrium, brings on a paroxysm.

The treatment in this case was static electricity. After a few sittings, the paroxysms of pain ceased; she was in every way better mentally and physically. She said "she felt like a different woman." She was free from any attack while under observation, for a period of four or five weeks, when she was discharged.<sup>5</sup>

The order of events in this case I conceive to be as follows: Ten years ago this patient was attacked with an acute nervous illness, of which two prominent symptoms were mental distress and epigastric pain. These two pro-

<sup>5</sup> She reported herself several months later still free from attacks.

cesses were so frequently associated together, that a reflex physiological connection became established between their nervous centres; the presence of the one then necessitated the reproduction of the other; and when later recovery from the acute illness occurred, the association being persistent, the presence of any physiological excitement or anxiety, was necessarily accompanied by a paroxysm of pain. The pathological condition lay in the association of two centres, and not in the centres themselves. The treatment resulted in the breaking up of this association, probably by means of suggestion.

A young woman, consulted me last October, 1890, in consequence of peculiar attacks of distressed breathing from which she suffered. The description of these attacks was that of wheezy respiration and a sensation of suffocation. They were sufficiently frequent and severe to oblige her to give up her occupation. Besides this she was anaemic, drank tea to excess, and had very little appetite and suffered from loss of strength; in other words, the usual condition of general debility. Careful inquiry elicited the fact that these paroxysms of suffocation were preceded by a train of minor symptoms, which developed in the following sequence: Ball in throat, fright, feeling of blood rushing into eyes, trembling, palpitation, chill, distressed breathing, crying spell, aching of heart. It further appeared that menstruation did not come on till she was 20 years old, but previous to this she had had numerous attacks of epistaxis. Ten years ago she suffered from slight attack of haemoptysis, and has done so about once a year ever since. These attacks always precede by a day or two the catamenia. Lungs are normal. When the haemoptysis comes on she has the following sensations: Feeling of blood in throat, fright, trembling, palpitation, pricking feeling in chest, chill, crying spell.

I was struck with the similarity between these two groups of symptoms, and further inquiry brought out the fact that when in her later attacks she felt the lump in her throat, she always imagined it was blood, and was frightened in consequence. The rest of the symptoms then followed by association. The attacks were brought on by almost any mental excitement, such as being obliged to hurry, being in a crowd, cross words, etc.

The paroxysms of distressed breathing had another origin. This first came on during an attack of gripe, dur-

ing the preceding December, and was apparently one of the neuroses so frequently seen following that disease, probably caused by the poison. It was then tacked onto the other group of symptoms, and the whole formed an association group.

The treatment consisted in forced feeding and static electricity. She rapidly gained in weight, and on Dec. 31 was discharged perfectly well. She had been ill nine months.

I may also cite here the case of a neurasthenic patient who exhibits a very irritable nervous system. This patient suffers considerably, when pregnant, with a variety of symptoms largely referable to the abdomen. When in this condition she suffers from great exhaustion, considerable nausea, abdominal pains of all kinds, tympanitic distention of the abdomen, paraesthesia of the left side, and various other symptoms. The exhaustion, faintness and abdominal distention are extreme. At present almost any strong irritation of the abdomen, such as massage, electricity, jolting in a carriage, etc., muscular and nervous tire, will result in the production of the same set of symptoms, and all the phenomena of pregnancy are exhibited, or at least of disturbance of the pelvic organs. It is proper to say that this patient at one time in the past suffered from some sort of pelvic inflammation, accompanied, so far as I can learn, by very similar train of symptoms.

The explanation of such groups of symptoms, is properly to be found, not in peripheral nerves, nor in spinal or cerebral centres, but rather in associations established by previous acute processes between such centres, or to diffusion of stimuli along physiological channels. It may be regarded as a hyper-excitability of the association systems of fibres, or a species of pathological physiology. I will not take the time for the citation of further illustrations, but I think that every one will be able to recall cases which will be better explained in this way than by any other.

The practical corollary from this theory is that in a large class of neuroses we are to look for their causes, not in diseased nerves and centres, but rather in a pathological association of normal anatomical elements, and the treatment is to be directed to the breaking up of this association, and the re-grouping of the nervous centres.



